

Student Workbook

Module 2



Solid Waste & Recycling Curriculum



It's Organic, Man!

Module 2

It's Organic, Man!

Recycling at Home

Lesson 9 – **Breakin' it Down**

Waste Characterization/Composting

Lesson 10 – **My Carrots Are Green**

Composting

Lesson 11 – **The Worms Ate My Homework**

Vermicomposting

Lesson 12 – **It's My Paper, and I Like It**

Papermaking

Lesson 13 – **Thoreau Think Piece**

Writing Assessment: RAFT

Lesson 14 – **Thoreau Think Piece**

Writing Assessment: RAFT

Solid Waste and Recycling Curriculum
Lesson 9

Name:_____

Breakin' It Down!

Date:_____

Objectives: I will understand that studies have been conducted to determine what makes up municipal solid waste.
I will be able to identify which of the categories of MSW generated can be recycled.
I will be able to identify what types of materials can be composted and what cannot.
I will recognize that for efficient composting, there must be a balance of materials.

Vocabulary:

Municipal Solid Waste:

Waste Characterization Study:

Environmental Protection Agency:

Organic Compounds:

Decompose:

Biodegrade:

Compost:

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Lesson 9

Name:_____

Breakin' It Down!

Date:_____

Waste Characterization:

Chart:

Material	Weight Generated (millions of tons PER YEAR)	Percent of Total Waste
TOTAL		100

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Lesson 9

Name:_____

Breakin' It Down!

Date:_____

Please draw a pie chart representing the information in the Waste Characterization table.

Pie Chart:

Which of the categories above can be composted?

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Lesson 9

Name:_____

Breakin' It Down!

Date:_____

List some items that can be composted.

List some items that cannot be composted.

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Lesson 9

Name:_____

Breakin' It Down!

Date:_____

Write the formula for next session's compost column.

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Lesson 9

Name:_____

Breakin' It Down!

Date:_____

Objectives: I will compare and contrast “browns” and “greens.”
I will discover the importance of air, water, organic matter, and “nature’s helpers” in composting.
I will construct a compost column.

Vocabulary:

Organic Matter:

Greens:

Browns:

Nature’s Helpers:

Composting:

Why is air important in composting?

Why is water important in composting?

Why is organic matter important in composting?

Green material contains lots of Nitrogen. Name some items that would be considered “greens.”

Brown material contains lots of Carbon. Name some items that would be considered “browns.”

“Nature’s Helpers” help with the decomposition process. Name some items that would be considered “Nature’s Helpers.”

Compare and contrast “browns” and “greens.”

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Lesson 10

Name:_____

My Carrots Are Green

Date:_____

Formula:

2 1/2 cups bagged salad
1/2 cup dried leaves
1/2 cup pencil shavings
1 cup shredded paper
1 cup water
1 cup soil

1 TBL compost starter

List the green material in the formula.

List the brown materials in the formula.

List the “Nature’s Helpers” in the formula.

List the organic materials in the formula.

Lesson 11

The Worms Ate My Homework **Date:**_____

Objectives: I will be able to draw connections between standard composting and vermicomposting.
I will explore the anatomy of red wigglers.

Vocabulary

Vermicomposting:

Red Wigglers:

Anterior

Posterior

Clitellum

Segments

The anterior (head end) of the Red Wiggler is narrower than the posterior (tail end).

What color is the anterior?

What color is the posterior?

Lesson 11

The Worms Ate My Homework Date:_____

The clitellum is the swollen section of the worm that is responsible for reproduction.

If your worm does not have a visible clitellum, see if your shoulder partner's worm has one.

Which end is the clitellum closer to?

Red Wigglers are made up of many rings called segments.

Compare your worm to your neighbor's.

Which worm has more segments?

Lightly touch the worm's anterior.

What does it do?

Lesson 11

The Worms Ate My Homework **Date:**_____

Lightly touch the worm's posterior.

What does it do?

How does the worm feel to you when you touch it?

When the worm moves forward, does it move head first or tail first?

Lesson 11

The Worms Ate My Homework **Date:**_____

Put some bedding material near the worm. Watch the worm for 1- 2 minutes.

Describe the worm's activity.

Solid Waste and Recycling Curriculum
Lesson 12

Name:_____

Its My Paper, And I Like It

Date:_____

Objectives: I will construct recycled paper from old newspapers.

Papermaking

Please describe, as best you can, the process that we used to make new paper (recycle) from old newspaper.

Solid Waste and Recycling Curriculum
Lesson 13

Name:_____

Thoreau Think Piece

Date:_____

Objectives: You will write a RAFT paper to show mastery of the concepts presented from previous lessons.

Topics to be covered by the RAFT:

- **Compost**
- **Vermicompost**
- **Paper Making**

RAFT

Role: Who are you as a writer?
Audience: Who are you writing to?
Format: What form will write in?
Topic: What is the subject of the writing?

Please select one of the following options:

Role: Piece of recycled paper Audience: Yourself Format: Diary Entry / Entries Topic: Describe how you were remade from old newspapers	Role: Compost pile Audience: Micro-organisms Format: Full page magazine advertisement Topic: Try to convince micro-organisms that a compost pile is a great place for a vacation
Role: A Red Wiggler Audience: A pen-pal Format: A friendly letter Topic: All about me	

Solid Waste and Recycling Curriculum
Lesson 13

Name: _____

Thoreau Think Piece

Date: _____

Please refer to your notes if you have any questions about the content covered.

Please refer to the rubric if you have any questions about how the RAFT will be graded.

Thoreau Think Piece-- RAFT Rubric

	0	Needs Work 1	Approaching Expectations 2	Meets Expectations 3	Score Received
Role: How well did you interpret the character's voice you were writing in?	The author was never in character.	The author stayed in character for some of the piece.	The author stayed in character for most of the piece.	The author stayed in character for the entire piece.	
Format: Did you follow the format that corresponds to the role?	The author does not follow the writing form assigned			The author follows the writing form assigned.	
Audience: How well did you acknowledge the group or person you were writing for?	The audience is not acknowledged.	The audience was acknowledged in one place.	The audience is acknowledged in two separate places.	The audience is acknowledged in at least three separate places.	

Solid Waste and Recycling Curriculum
Lesson 13

Name: _____

Thoreau Think Piece

Date: _____

Thoreau Think Piece-- RAFT Rubric

	0	Needs Work 1	Approaching Expectations 2	Meets Expectations 3	Score Received
Vocabulary: Did you use subject (topic) appropriate vocabulary?	The author does not use any vocabulary words.	The author uses one vocabulary word.	The author uses two vocabulary words.	The author uses at least three vocabulary words.	
Topic: How well did you prove that you learned about the topic?	The author does not include any facts.	The author includes at least two facts.	The author includes at least three facts.	The author includes at least four facts.	
Proper use of spelling, grammar, and punctuation.	The writer makes more than 4 errors in grammar or spelling.	The writer makes 3-4 errors in grammar or spelling.	The writer makes 1-2 errors in grammar and spelling.	Writer makes no errors in grammar or spelling.	

Solid Waste and Recycling Curriculum
Lesson 13

Name: _____

Thoreau Think Piece

Date: _____

Thoreau Think Piece-- RAFT Rubric

Role	Points earned:
Format	Points earned:
Audience	Points earned:
Vocabulary	Points earned:
Topic	Points earned:
Spelling	Points earned:

Total points earned:	Total possible: 18	Percent:
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Solid Waste and Recycling Curriculum
Lesson 14

Name: _____

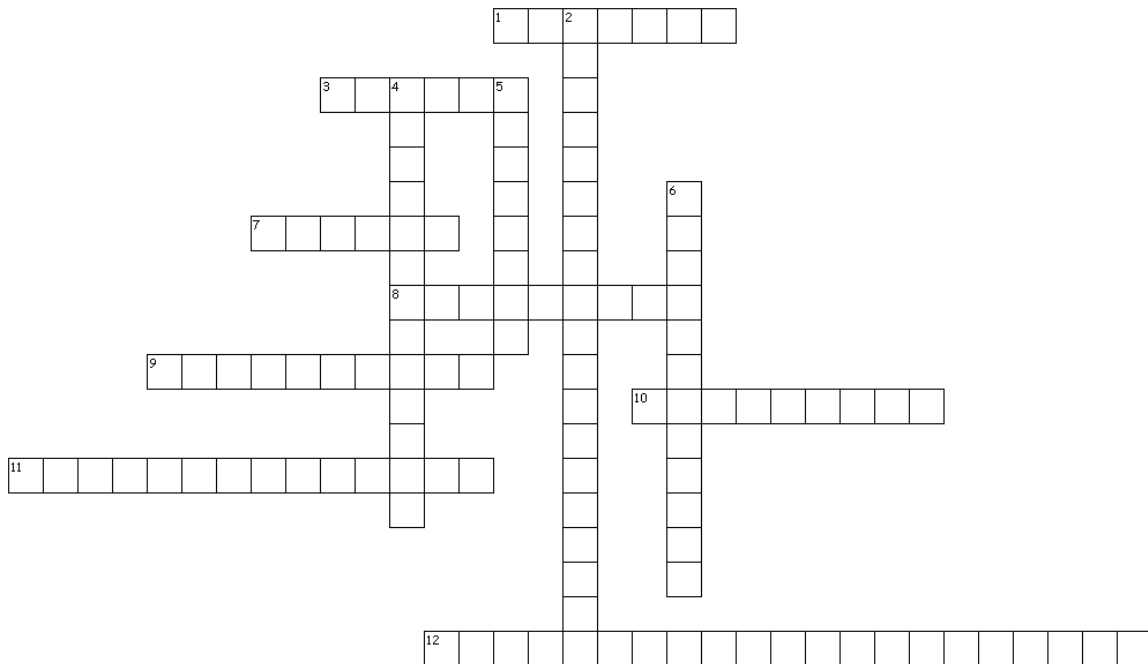
Thoreau Think Piece: Day 2

Date: _____

Objectives: You will finish creating your RAFT paper.

While continuing work on the RAFT, please refer to the rubric presented in Lesson 13.

Please solve the following puzzles if you have completed your RAFT paper.



Lesson 14

Thoreau Think Piece: Day 2

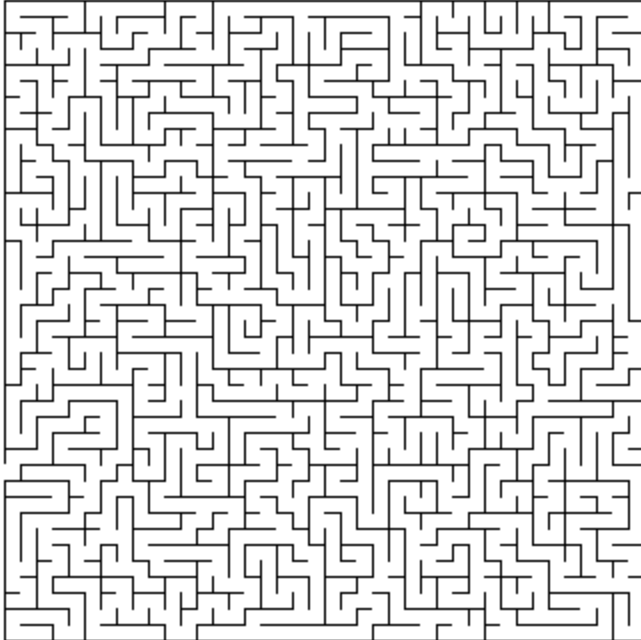
Date:_____

Across

1. the result of the process of decomposition of organic material
3. woody material
7. organic matter that has been freshly cut
8. the swollen section of a worm
9. materials breaking down through the use of microorganisms
10. the back end
11. help break down organic matter in a compost pile
12. study to find out the types and volume of our MSW

Down

2. trash generated by people and industry
4. food in the decomposition process
5. the rings that contract and expand during movement
6. composting with worms



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